

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference E-1721/03	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IT 03/00369	International filing date (day/month/year) 13.06.2003	Priority date (day/month/year) 14.06.2002
International Patent Classification (IPC) or both national classification and IPC E05B65/32		
Applicant INTIER AUTOMOTIVE CLOSURES S.P.A.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 09.01.2004	Date of completion of this report 02.11.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Westin, K Telephone No. +31 70 340-2635



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IT 03/00369

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-3, 6-11	as originally filed
4, 5	received on 20.09.2004 with letter of 14.09.2004

Claims, Numbers

1-7	received on 20.09.2004 with letter of 14.09.2004
-----	--

Drawings, Sheets

1/1	as originally filed
-----	---------------------

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/T 03/00369

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N) Yes: Claims 1-7
 No: Claims

Inventive step (IS) Yes: Claims
 No: Claims 1-7

Industrial applicability (IA) Yes: Claims 1-7
 No: Claims

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IT 03/00369

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2.1 Reference is made to the following documents:

- D1: DE 22 11 161 A,
- D2: US 5 348 355 A,
- D3 FR 2 498 238 A,
- D4 US 3 848 911 A,
- D5 DE 22 20 677 A.

2.2 It is to be noted that the presently used term "faced ramps" of claim 1 is unclear (Article 6 PCT). This term was never used in the original application, and it is not clear in which sense the ramps are "faced". The original term "oblique portions" should consequently have been used in claim 1.

2.3 Document D4 discloses in the embodiments of figure 3 or 4 a lock for a door of a motor vehicle comprising: a closing mechanism designed for coupling with a lock striker 12 along a direction of relative coupling. A supporting body 1, 3 of said closing mechanism presents a housing seat with an entry area delimited laterally by a pair of oblique portions 11. The oblique portions form an entry area for an engagement portion of the striker. A bottom wall (on the right side in figures 3 and 4) delimits the housing seat opposite to the entry area, and elastically compliant arrest means 17 are coupled to said bottom wall. The elastically compliant arrest means 17 are formed by an element which is distinct from the oblique portions 11.

2.4 The subject-matter of claim 1 differs from a lock according to D4 essentially in that the arrest means is coated on its surface, in the area of interaction with the engagement portion of the striker, by a rigid protective shield.

2.5 The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IT 03/00369

2.6 The goal of the present invention can be described as avoiding wear and tearing of the arrest means and also to achieve a uniform contact pressure between the striker and the arrest means (p.4, §1,2). To coat an elastic arrest means with a rigid protective shield in order to achieve this goal is however a well known measure in the field of vehicle locks (see e.g. D1, p.3, last 5 lines; D3, p.3, §7 and D5, p.6, l.16-19).

2.7 To coat the arrest means 17 in D4 by a rigid protective shield in order to improve its wear resistance would be immediately obvious for the skilled person, and he would therefore arrive at a lock according to claim 1 without inventive skill (Article 33(3) PCT).

2.8 The dependent claims 2-7 do not appear to be able to support an inventive step (Article 33(3) PCT). The features of claim 2-5 appear to be obvious design alternatives. Claim 6 relates rather to the way the lock is manufactured than to clear structural limitations of the lock itself. The use of ceramic material for similar vehicle lock parts is known e.g. from D2, col.4, l.44-46.

2.9 The invention is industrially applicable in the field of locks (Article 33(4) PCT).

20.09.2004

On account of the curvilinear conformation of the ⁹⁶ engagement portion of the lock striker, distribution of the contact pressures between the external surfaces of the engagement portion and of the buffer is not uniform.

5 In particular, the contact pressure is maximum in an area corresponding to an intermediate portion of the buffer and decreases markedly towards the opposite side edges of the latter.

Over time, this may cause tearing of the buffer,
10 with adverse effects on retention of the lock striker and on the damping action performed by the buffer. Furthermore, this phenomenon may cause an undesired increase in play between the dimensions of the door and the corresponding opening for receiving the door, which
15 is provided in the bodywork of the motor vehicle, with consequent generation of noise and possible rattling of the door when the vehicle is travelling.

DISCLOSURE OF INVENTION

The purpose of the present invention is to provide
20 a lock for a door of a motor vehicle, which will enable, in a simple and inexpensive way, to reduce the noise generated by coupling between the lock itself and the corresponding lock striker.

According to the present invention, a lock is
25 provided for a door of a motor vehicle, ~~said lock~~
according to claim 1.
~~comprising: a closing mechanism designed for coupling~~

with a lock striker along a direction of relative coupling; a supporting body of said closing mechanism presenting a housing seat for an engagement portion of said lock striker; and elastically compliant arrest means delimiting said housing seat at least in the aforesaid direction of relative coupling in order to define damped arrest of said engagement portion of said lock striker; said lock being characterized in that said arrest means are coated on their surface, in the area of interaction with said engagement portion of said lock striker, by a rigid protective shield.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, there follows a description of a preferred embodiment, provided purely by way of non-limiting example, and with reference to the attached drawings, in which:

- Figure 1 is a top plan view, with parts removed for reasons of clarity, of a lock for a door of a motor vehicle built according to the present invention and coupled with a fixed lock striker; and

- Figure 2 is a perspective view, at an enlarged scale, of a damping buffer of the lock illustrated in Figure 1 for receiving the lock striker.

25 BEST MODE FOR CARRYING OUT THE INVENTION

With reference to Figure 1, the number 1

EPO - DG 1

- 12 -

20.09.2004

CLAIMS

96

1. A lock (1) for a door of a motor vehicle comprising:

- 5 - a closing mechanism (6) designed for coupling with a lock striker (2) along a direction (B) of relative coupling;
- a supporting body (4) of said closing mechanism (6) having a housing seat (5) for an engagement portion (3) of said lock striker (2); said housing seat (5) having an entry area (11) for said engagement portion (3) and being delimited:
 - 15 o laterally, by a pair of faced ramps (15) diverging with respect to one another towards said entry area (11), and
 - o at an end opposite to said entry area (11), by a bottom wall (12) orthogonal to said direction (B) of relative coupling;
- elastically compliant arrest means (30) coupled to said bottom wall (12) to delimit said housing seat (5) in said direction (B) of relative coupling in order to define damped arrest of said engagement portion (3) of said lock striker (2); said arrest means (30) being coated on their surface, in the area of interaction with said engagement portion (3) of said lock striker (2), by a rigid protective shield (40);

- 13 -

characterized in that said shield (40) is carried by said arrest means (30) and is distinct from said ramps (15).

2. The lock according to Claim 1, characterized in that said shield (40) is constituted by a plate having 5 opposite lateral edges (41) folded on said arrest means (30).

3. The lock according to Claim 1 or Claim 2, characterized in that said arrest means comprise a flexible element (30) fixed to said bottom wall (12)).

10 4. The lock according to Claim 3, characterized in that said flexible element (30) is made of an elastomeric material.

15 5. The lock according to Claim 3 or Claim 4, characterized in that said flexible element (30) and said shield (40) have, in the area of interaction with said engagement portion (3) of said lock striker (2), a U-shaped conformation.

20 6. The lock according to any one of Claims 3 to 5, characterized in that said shield (40) is fixed by forcing on said flexible element (30).

25 7. The lock according to any one of the preceding claims, characterized in that said shield (40) has, in the area of interaction with said engagement portion (3) of said lock striker (2), a surface coating of ceramic material.